

THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Patent Application of: )  
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GUTKOWICZ-KRUSIN et al. )  
)  
Serial No. 09/032,450 )  
)  
Filed: February 27, 1998 )  
)  
For: SYSTEMS AND METHODS FOR )  
THE MULTISPECTRAL IMAGING )  
AND CHARACTERIZATION OF SKIN )  
TISSUE )

Group Art Unit: 2721 **RECEIVED**  
OCT 28 1998  
Group 2700

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

**INFORMATION DISCLOSURE STATEMENT**  
**PURSUANT TO 37 CFR §§1.97 and 1.98**

The Examiner is respectfully requested to consider and cite the following references in the above-identified application, copies of which are enclosed.

These references are also listed on the enclosed PTO Form 1449.

1. U.S. Patent No. 5,749,830 to Kaneko et al., dated May 12, 1998, based on an application filed on October 27, 1994;
2. U.S. Patent No. 5,701,902 to Vari et al., dated December 30, 1997, based on an application filed on September 14, 1994;
3. U.S. Patent No. 5,699,798 to Hochman et al., dated December 23, 1997, based on an application filed on June 7, 1995;
4. U.S. Patent No. 5,590,660 to MacAulay et al., dated January 7, 1997, based on an application filed on March 28, 1994;

5. U.S. Patent No. 5,528,703 to Lee, dated June 18, 1996;
6. U.S. Patent No. 5,515,449 to Tsuruoka et al., dated May 7, 1996;
7. U.S. Patent No. 5,421,337 to Richards-Kortum et al., dated June 6, 1995;
8. U.S. Patent No. 5,408,996 to Salb, dated April 25, 1995;
9. U.S. Patent No. 5,369,496 to Alfano et al., dated November 29, 1994;
10. U.S. Patent No. 5,363,854 to Martens et al., dated November 15, 1994;
11. U.S. Patent No. 5,241,468 to Kenet, dated August 31, 1993;
12. U.S. Patent No. 5,174,297 to Daikuzono, dated December 29, 1992;
13. U.S. Patent No. 5,036,853 to Jeffcoat et al., dated August 6, 1991;
14. U.S. Patent No. 5,003,977 to Suzuki et al., dated April 2, 1991;
15. U.S. Patent No. 4,957,114 to Zeng et al., dated September 18, 1990;
16. U.S. Patent No. 4,930,516 to Alfano et al., dated June 5, 1990;
17. U.S. Patent No. 4,894,547 to Leffell et al., dated January 16, 1990;
18. U.S. Patent No. 4,821,117 to Sekiguchi, dated April 11, 1989;
19. U.S. Patent No. 4,773,097 to Suzaki et al., dated September 20, 1988;
20. U.S. Patent No. 4,768,513 to Suzuki et al., dated September 6, 1988;
21. U.S. Patent No. 4,556,057 to Hiruma et al., dated December 3, 1985;
22. U.S. Patent No. 4,505,583 to Konomi, dated March 19, 1985;
23. U.S. Patent No. 4,236,082 to Butler, dated November 25, 1980;
24. U.S. Patent No. 4,170,987 to Anselmo et al., dated October 16, 1979;
25. U.S. Patent No. 3,335,716 to Alt et al., dated August 15, 1967;
26. European Patent Application Publication No. 0 650 694 A1 to Coppleson et al., published May 3, 1995;

27. European Patent Application Publication No. 0 359 433 A1 to Jeffcoat et al., published March 21, 1990;
28. "Border irregularity:atypical moles *versus* melanoma", C.L. Huang et al., Eur J Dermatol, Vol. 6, pp. 270-273, June 1996;
29. "*In vivo* Spectrophotometric Evaluation of Neoplastic and Non-Neoplastic Skin Pigmented Lesions. III. CCD Camera-Based Reflectance Imaging", R. Marchesini et al., Photochemistry and Photobiology, Vol. 62, No. 1, pp.151-154, 1995;
30. "The Morphologic Criteria of the Pseudopod in Surface Microscopy", S.W. Menzies, et al., Arch Dermatol, Vol. 131, pp. 436-440, April 1995;
31. "A rudimentary system for automatic discrimination among basic skin lesions on the basis of color analysis of video images", H. Takiwaki et al., Journal of the American Academy of Dermatology, Vol. 32, No. 4, pp. 600-604, April 1995;
32. "Topodermatographic Image Analysis for Melanoma Screening and the Quantitative Assessment of Tumor Dimension Parameters of the Skin", H. Voigt et al., CANCER, Vol. 75, No. 4, February 15, 1995;
33. "Application of an artificial neural network in epiluminescence microscopy pattern analysis of pigmented skin lesions:a pilot study", M. Binder et al., British Journal of Dermatology 130; pp. 460-465, 1994;
34. "Computer image analysis in the diagnosis of melanoma", A. Greene et al., Journal of the American Academy of Dermatology; Vol. 31, No. 6, pp. 958-964, 1994;
35. "Computerized Digital Image Analysis:An Aid for Melanoma Diagnosis", A.J. Sober et al., The Journal of Dermatology, Vol. 21, pp. 885-890, 1994;
36. "Neural Network Diagnosis of Malignant Melanoma From Color Images", F. Ercal et al., IEEE Transactions of Biomedical Engineering, Vol. 41, No. 9, pp. 837-845, September 1994;
37. "The ABCD rule of dermatoscopy", F. Nachbar et al., Journal of the American Academy of Dermatology, Vol. 3, No. 4, pp. 551-559, April 1994;
38. "Evaluation of different image acquisition techniques for a computer vision system in the diagnosis of malignant melanoma", T. Schindewolf et al.,

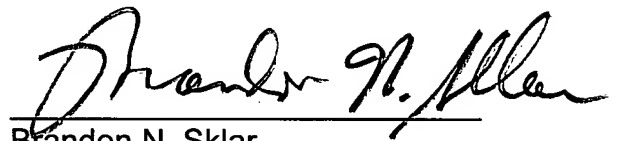
Journal of the American Academy of Dermatology, Vol. 31, No. 1, pp. 33-41, July 1994;

39. "Detection of Skin Tumor Boundaries in Color Images", F. Ercal et al., IEEE Transactions on Medical Imaging, Vol. 12, No. 3, pp. 624-627, September 1993;
40. "Automatic Color Segmentation Algorithms with Application to Skin Tumor Feature Identification", S.E. Umbaugh et al., IEEE Engineering in Medicine and Biology, pp. 75-82, September 1993;
41. "Comparison of classification rates for conventional and dermatoscopic images of malignant and benign melanocytic lesions using computerized colour image analysis", T. Schindewolf et al., Eur J Dermatol, Vol. 3, No. 4, pp. 299-303, May 1993;
42. "Classification of Melanocytic Lesions with Color and Texture Analysis Using Digital Image Processing", T. Schindewolf et al., The International Academy of Cytology, Analytical and Quantitative Cytology and Histology, pp. 1-11, Vol. 15, No. 1, February 1993;
43. "Clinical Diagnosis of Pigmented Lesions Using Digital Epiluminescence Microscopy", R.O. Kenet et al., Arch Dermatol, Vol. 129, pp. 157-174; February 1993;
44. "Optical properties of human dermis *in vitro* and *in vivo*", R. Graaff et al., Applied Optics, Vol. 32, No. 4, pp. 435-447, February 1, 1993;
45. "Automatic Detection of Irregular Borders in Melanoma and Other Skin Tumors", J.E. Golston et al., Computerized Medical Imaging and Graphics, Vol. 16, No. 3, pp. 199-203, 1992;
46. "Automatic Detection of Asymmetry in Skin Tumors", W.V. Stoecker et al., Computerized Medical Imaging and Graphics, Vol. 16, No. 3, pp. 191-197, 1992
47. "Results obtained by using a computerized image analysis system designed as an aid to diagnosis of cutaneous melanoma", N. Cascinelli et al., Melanoma Research, Vol. 2, pp. 163-170, 1992;
48. "An Automatic Color Segmentation Algorithm with Application to Identification of Skin Tumor Borders", S.E. Umbaugh et al., Computerized Medical Imaging and Graphics, Vol. 16, No. 3, pp. 227-235, May-June 1992;

49. "Automatic Color Segmentation of Images with Application to Detection of Variegated Coloring in Skin Tumors", S.W. Umbaugh et al., IEEE Engineering in Medicine and Biology Magazine, December 1989;
50. "Multispectral Imaging of Burn Wounds:A New Clinical Instrument for Evaluating Burn Depth", M.A. Afromowitz et al., IEEE Transactions on Biomedical Engineering, Vol. 35, No. 10, pp. 842-850; October 1988;
51. "In vivo epiluminescence microscopy of pigmented skin lesions.I.Pattern analysis of pigmented skin lesions", H. Pehamberger et al., Journal of the American Academy of Dermatology, Vol. 17, No. 4, pp. 571-583, October 1987;
52. "In vivo epiluminescence microscopy of pigmented skin lesions.II.Diagnosis of small pigmented skin lesions and early detection of malignant melanoma", A. Steiner et al., Journal of the American Academy of Dermatology, Vol. 17, No. 4, pp. 584-591; October 1987;
53. "The Optics of Human Skin", R.R. Anderson et al., The Journal of Investigative Dermatology, Vol. 77, No. 1, pp. 13-19; July 1981;
54. "Melanin, a unique biological absorber", M.L. Wolbarsht, Applied Optics, Vol. 20, No. 13, pp. 2184-2186; July 1, 1981; and
55. "The wavelet transform, time frequency localization and signal analysis", I. Daubechies, IEEE Trans Inform Theory 36:961-1005; 1990;
56. "Wavelets in Medicine and Biology", Aldroubi, et al., ed. C&C Press, NY, pp. 11-15; 1996;
57. "Singularity detection and processing with wavelets", S. Mallat, et al., IEEE Trans Inform Theory 38:617-643; 1992;
58. "Wavelets and Applications", S. Mallat et al., S. Verlag & Y. Meyer (ed.) NY, "Wavelet Maximum Representation", pp. 207-284; 1992;
59. "Characterization of signals from Multiscale edges", S. Mallat et al., IEEE Trans Patt and Mech Int'l.; 14:710-732; 1992;
60. "Introduction to Statistical Pattern Recognition", F. Kukumaga, Academic Press, Boston, pp. 19-96, 125, 219-221; 1990; and
61. "Image Features From Phase Congruency", P. Konesi, University of Western Australia, pp. 1-30; Technical Report 9/4, Revised June 1995.

Since no Official Action on the merits has been received, no fee is believed to be due. If any fees are found to be due, please charge Deposit Account No. 13-4500, Attorney Docket No. 5066-4010. A copy of this authorization is enclosed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brandon N. Sklar", written over a horizontal line.

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